

Clean Set of Claims

1. A time domain head-related transfer function model for use with 3D sound applications, comprising:

a plurality of Eigen filters;

a plurality of spatial characteristic functions derived from time domain head-related transfer functions and adaptively combined with said plurality of Eigen filters; and

a plurality of regularizing models adapted to regularize said plurality of spatial characteristic functions prior to said respective combination with said plurality of Eigen filters.

2. The time domain head-related transfer function model for use with 3D sound applications according to claim 1, further comprising:

a summer operably coupled to said plurality of combined Eigen filters combined with said plurality of regularized spatial characteristic functions to provide said time domain head-related transfer function model.

4. The time domain head-related transfer function model for use with 3D sound applications according to claim 1, further comprising:

a smoothness control operably coupled with said plurality of regularizing models to allow control of a trade-off between localization and smoothness of said time domain head-related transfer function.

5. A time domain head-related impulse response model for use with 3D sound applications, comprising:

a plurality of Eigen filters;

a plurality of spatial characteristic functions derived from head-related impulse responses and adapted to be respectively combined with said plurality of Eigen filters; and

a plurality of regularizing models adapted to regularize said plurality of spatial characteristic functions prior to said respective combination with said plurality of Eigen filters.

6. The time domain head-related impulse response model for use with 3D sound applications according to claim 5, further comprising:

a summer adapted to sum said plurality of combined Eigen filters combined with said plurality of regularized spatial characteristic functions to provide said head-related impulse response model.

---